
Appendix A: Codes and interfaces

This appendix describes a typical sound recording configuration, lists the Meridian Integrated RAN (MIRAN) hexadecimal codes that are displayed on the four-digit display on the MIRAN faceplate, and describes the external connectors and their pin assignments. The hex codes provides the status of the card during power-up and on the operational status when in service.

Sound recording configuration

The following is an example of a PC-based digital sound recording. Alternate configurations can be used that produce the 8kHz A-law or U-law PCM format output files required by the MIRAN either in .ULW or .WAV format.

Minimum PC requirements:

- 100MHz Pentium processor
- 32Mbytes of RAM
- 1Gbyte hard drive
- x4 CD ROM
- Windows 95
- Speakers

Recommended sound card:

Creative Labs AWE 32 Plug and Play audio card Model CT3601 (comes with the microphone)

PCMCIA drive:

DATABOOK ThinCard Drive Model TMB-240

Software:
GOLDWAVE sound editor.

Note: When recording announcements, use the following recommendations. To remove sharp transitions at the boudaries of an announcement, add fade-in (from 0) at the start of the message and fade-out (to 0) at the end of message. Also one second of silence must be added to the beginning and to the end of each message.

When the internal RAM test, ALU test, address mode test, boot ROM test, timer test, or external RAM test fails, the MIRAN will go into a maintenance loop and no further processing will be possible. A failure message is displayed to indicate which test failed. The message changes to **F:xx** Example; if the timer test fails, F:05 is displayed.

MIRAN hexadecimal codes

T:00	Initialization
T:01	Testing Internal RAM
T:02	Testing ALU
T:03	Testing address modes
T:04	Testing Boot ROM
T:05	Testing timers
T:06	Testing watchdog timer
T:07	Testing external RAM
T:08	Testing Host DPRAM
T:09	Testing DS30 DPRAM
T:10	Testing security device
T:11	Testing Flash memory
T:12	Programming PCIFPGA

T:13	Programming DS30 FPGA
T:14	Programming CEMUX FPGA
T:15	Programming DSP FPGA
T16	Testing CEMUX interface
T:17	Testing EEPROM
T:18	Booting 486, waiting for response with self-test information
T:19	Waiting for application start-up message from 486
T:20	CardLan enabled, waiting for Request Config. Message
T:21	CardLan operational, A07 enabled under host control
T:22-99	Reserved for future diagnostic tests
RAnn	RAN application active and enabled for terminal OA&M (nn- MIRAN LAN card number 00-15).
RA-S	RAN application active with Set Based OA&M running. (Terminal is locked out until this clears)
W A:	Writing to A: drive. (Do not power down MIRAN or remove the drive).
W B:	Writing to B: drive. (Do not power down MIRAN or remove the drive)
W C:	Writing to C: drive. (Do not power down the MIRAN)
R A:	Reading from A: drive
R B:	Reading from B: drive
R C:	Reading from C: drive
UP00	Upgrade to onboard Flash has started (0% completed)
UPnn	Upgrade to onboard Flash in progress (nn% complete)

UPOK	Upgrade to onboard Flash successfully completed
UPF	Upgrade to onboard Flash failed.

When any other test fails including the EEPROM test, a message will be displayed for three seconds after the T:17 message to indicate the problem. If more than one test fails, the message displayed indicates the first fault.

MIRAN interface connectors

The interface connectors connect the MIRAN to the external equipment at the faceplate and the backplane or MDF connectors.

RS-232 ports and pinouts

Two serial ports are provided on the MIRAN board for maintenance functions. Access to both ports is over tip/ring pairs on the backplane. A permanently connected terminal should be connected at the backplane. Both ports are also accessible through the MIRAN faceplate mini-DIN connector for occasional OA&M and debugging purpose. Port B connects the terminal and port A connects to port B in a daisy-chain MIRAN configuration.

Table A-1 displays pinouts for the MIRAN faceplate mini-DIN connector.

Table A-1
Faceplate mini-DIN connector signals

Pin No.	Signal	Description
1	BDTRB-	Port B Data Terminal Ready
2	BSOUTB-	Port B Serial Data Out
3	BSINA-	Port B Serial Data In
4	SGRD	Signal Ground
5	BSINA-	Port A Serial Data In
6	BCTSA-	Port A Clear To Send
7	BSOUTA-	Port A Serial Data Out
8	BDTRA-	Port A Data Terminal Ready

Table A-2 lists the RS-232 connections at the I/O panel 50-pin connector. It lists the pins signal assignments, wire color code, and the description of the signals. Total distance from the MIRAN to the MDF and from the MDF to the terminal should not exceed 50 feet.

Table A-2
RS232 port pinouts and wire color code on the 50-pin connector

I/O Panel 50-pin connector pin assignment and wire color code	MIRAN signal name	MIRAN signal description
16 (BL-Y)	Reserved	Future use
41 (Y-BL)	BDCDA-	Port A Data Carrier Detect
17 (O-Y)	BSINA-	Port A Serial Data In
42 (Y-O)	BSOUTA-	Port A Serial Data Out
18 (G-Y)	BDTRA-	Port A Data Terminal Ready
43 (Y-G)	SGRD	Signal Ground
19 (BR-Y)	BDSRA-	Port A Data Set Ready
44 (Y-BR)	BRTSA-	Port A Request to Send
20 (s-y)	BCTSA-	Port A Clear to Send
45 (Y-S)	BSINB-	Port B Serial Data In
21 (BL-V)	BSOUTB-	Port B Serial Data Out
46 (V-BL)	BDCDB-	Port B Data Carrier Detect
22 (O-V)	BDTRB-	Port B Data Terminal Ready
47 (V-O)	BDSRB-	Port B Data Set Ready

DID configuration for telephone set-based OA&M access

To configure the system for the telephone set-based OA&M access, you must configure the DID route and trunk route data block using LD 16, LD 14, and to configure the telephone set using LD 11.

Table A-2 lists the commands to configure the DID route.

Table A-3
DID route configuration example using LD 16 (Part 1 of 2)

Prompt	Response	Prompt	Response
TYPE	RDB	TIMR	IFC 256
CUST	0		OGF 512
ROUT	89-100		EOD 13952
TYPE	RDB		LCT 256
CUST	00-0		DSI 34944
DMOD			NRD 10112
ROUT	89-100		DDL 70
DES	Set Based		ODT 4096
TKTP	DID-DID		RGV 640
M911_ANI	NO		FLH 510
NPID_TBL_NUM	0		GTO 896
SAT	NO		GTI 0
RCLS	EXT		SFB 3
DTRK	NO		IENB 5
ISDN	NO		TPD 0
PTYP	ACO		AAD 384
AUTO	NO		MAD 500
DNIS	NO		VSS 0
IANI			VGd 6
ICOG	IAO	SST	5 0
RANX	NO	DTD	NO
SRCH	LIN	SCDT	NO
TRMB	YES	2 DT	NO
STEP		NEDC	ETH
ACOD	89	FEDC	ETH
TARG	01	CPDC	NO
BILM	NO	DLTN	NO
OABS		HOLD	02 02 40
JDGT	4	SEIZ	02 02
INST		SVFL	02 02
IDC	NO	OPCB	NO
DCNO	0	DDO	NO
NDNO	0	DRNG	NO
DEXT	NO	BTUA	NO
MFC	NO	CDR	NO

Table A-3
DID route configuration example using LD 16 (Part 2 of 2)

Prompt	Response	Prompt	Response
CCD	NO	OHTD	NO
NATL	YES	PLEV	2
SSL		OPR	NO
CFWR	NO	PRDL	YES
IDOP	NO	EOS	NO
VRAT	NO	DNSZ	0
MUS	NO	RCAL	NO
MR	NO	MCTS	NO
PANS	YES	ALRM	NO
RUCS	0	BTT	30
EQAR	NO	ACKW	NO
FRL	0 0	ART	0
FRL	1 0	PECL	NO
FRL	2 0	DCTI	0
FRL	3 0	TIDY	89 89
FRL	4 0	SGRP	0
FRL	5 0	CCB	NO
FRL	6 0	CCBA	NO
FRL	7 0	CAC	3
OHQ	NO	ANDN	
OHQT	00	AACR	NO
TTEL	0		

Table A-4
DID configuration example

DID trunk configuration using LD 14		Set configuration using LD 11	
Prompt	Response	Prompt	Response
TYPE	DID	TYPE	2616
TN	3 7	TN	9 0
DATE		DATE	
DES		DES	VPS
TN	003 0 00 07	TN	009 0 00 00
TYPE	DID	TYPE	2616
CDEN	8D	CDRN	8D
CUST	0	CUST	0
XTRK	EXUT	AOM	0
FWTM	NO	FDN	
TRK	ANLG	TGAR	0
NCOS	0	LDN	NO
RTMB	89 1	NCOS	0
NITE		SGRP	0
SIGL	LDR	RNPG	0
STRI/STRO	IMM IMM	SCI	0
SUPN	NO	SSU	
CLS	UNR DTN ...	XLST	
TKID		SCPW	
DTCR	NO	SFLT	NO
DATE	27 Jan 97	CAC	3
		CLS	UNR ...
		CPND_LANG	ENG
		HUNT	
		PLEV	02
		AST	
		IAPG	0
		AACS	NO
		ITNA	NO
		DGRP	
		MLWU_LANG	0
		DNDR	0
		KEY 00 SCR	1700 0 MARP

Analog ports and pinouts

The MIRAN supports two analog input ports in order to connect external sources for recording messages and/or music, or, alternatively, to provide two analog channels that can be mapped into up to eight logical RAN units.

The 3.5 mm Audio jack provides access to a single analog input and a single analog output. On the backplane, however, two analog inputs and two analog outputs are available for backing up stored messages onto audio cassette tape or, alternatively, for connecting to an external paging amplifier.

Table A-5 lists the 50-pin I/O panel connector pins and their signal assignment for the analog ports.

Table A-5
Analog port backplane signals

I/O Panel 50-pin connector pin assignment and wire color code	MIRAN signal name	MIRAN signal description
5 (S-W)	AGND	Analog Ground
30 (W-S)	AGND	Analog Ground
7 (O-R)	AIN0	Analog In, Port 0
32 (R-O)	AIN1	Analog In, Port 1
9 (BR-R)	AGND	Analog Ground
34 (R-BR)	AGND	Analog Ground
Note: Cross-connect audio pairs can be used to connect to external recording devices for the purpose of backing up announcements to a tape.		

MIRAN cross-connect channels

The MIRAN supports two cross-connect channels to provide connection to callers on multiple incoming lines.

Table A-6 lists the 50-pin I/O panel connector pin assignments for the MIRAN cross-connect channels.

Table A-6
MIRAN cross-connect port MDF signals

25-pair pinout and color code	Signal	Description
1 (BL-W)	RANAR0	Port 0 Audio RING
26 (W-BL)	RANAT0	Port 0 Audio TIP
2 (O-W)	RANB0	Port 0 Signaling RING to Port 0 busy (GRD)
3 (G-W)	RANAR1	Port 1 Audio RING
28 (W-G)	RANAT1	Port 1 Audio TIP
4 (BR-W)	RANB1	Port 1 Signaling RING to Port 1 busy (GRD)

MIRAN faceplate to modem cabling

Table A-7
NTAG81CA/DA modem cable RS-232 pinouts

Signal name	9-pin male (MIRAN side) Pin No.	25-pin male (Modem side) Pin No.
TX	2	2
RX	3	3
DTR	4	20
GRN	5	7

I/O panel to modem cable**Table A-8****I/O panel connector to modem cable pinouts**

Signal name	50-pin I/O panel parallel connector Pin No.	25-pin male (RS-232) (Modem side) Pin No.
TX	21	2
RX	45	3
DTR	22	20
GRN	43	7

Modem setup

To setup the modem, use a terminal connected to the modem. Set up the terminal for 9600 bps, 8 bits, 1 start, 1 stop, and no parity.

- 1** Setting the modem to auto answer
 - Connect the terminal to the modem
 - Type “AT” for a Hayes compatible modem. If the modem is connected properly, it will reply “OK”.
 - Type “ATS0=1”
 - Type “AT&W0” to save the settings.
- 2** Disable result codes.
 - Type “AT” for a Hayes compatible modem. If the modem is connected properly, it will reply “OK”.
 - Type “ATQ1”
 - Type “AT&W0” to save the settings.
- 3** Connect the modem to MIRAN using one of the cable configuration tabulated above.